Bull. Kitakyushu Mus. Nat. Hist., **16**: 99–104, pl. 1. March 28, 1996

A New Palaeontinid Species from the Lower Cretaceous of Brazil (Homoptera: Palaeontinidae)

Kyoichiro UEDA

Kitakyushu Museum and Institute of Natural History,
Nishihonmachi 3, Yahatahigashiku,
Kitakyushu 805, Japan
(Received December 3, 1996)

Abstract A new genus and species of Palaeontinidae is named and described from the Lower Cretaceous (Aptian) of Araripe, Brazil.

Recently, a superb fossil insect collection from Araripe (Lower Cretaceous), of Brazil was preserved in Kitakyushu Museum and Institute of Natural History (KMNH) and I have found a remarkable palaeontinid species in this collection which is the first record of Palaeontinidae from the locality. This fossil species clearly shows a great similarity with *Wonnacottella pulcherrima* WHALLEY & JARZEMBOWSKI, 1985 described from the lithographic limestone of Montsech (Lower Cretaceous), Lérida, Spain as discussed below in detail.

The study of wing venation and the homology of wing structure has progressed distinctly and the results were summarized in KUKALOVÁ-PECK (1991) generally, and in DWORAKOWSKA (1988) on the Auchenorrhyncha. However, for the sake of comparison and convenience, here I follow WHALLEY & JARZEMBOWSKI (1985) mainly in the nomenclature of wing venation. The names of each vein corresponding to the former two works are added in parentheses on the figure.

Systematic Palaeontology

Order Hemiptera
Suborder Homoptera
Superfamily Cicadoidea
Family Palaeontinidae HANDLIRSCH, 1906

Genus ***Parawonnacottella*** gen. nov.

Derivation of name. From *Wonnacottella* WHALLEY & JARZEMBOWSKI, 1985, the related group of this new genus.

Type-species. *Parawonnacottella araripensis* gen. & sp. nov.

Diagnosis. Palaeontinid similar to *Wonnacottella* WHALLEY & JARZEMBOWSKI,

1985 in general appearance, but differing from the latter in having the cell below Rs+ M_1, which is almost equally separated by the nodal line, CuA_1 aligned with stem of CuA, CuA_2 strongly curved towards CuP just after the branch with CuA_1, and anterior margin not so indented where the nodal line reaches the margin.

Parawonnacottella araripensis gen. and sp. nov.

(Plate 1, Figs. 1, 2)

Name. After the Araripe basin, Brazil.

Description. Species known from single left forewing, antero-basal portion of wing partly missing. Wing triangular with small clavus; anterior margin rather straight and not so indented where the nodal line reaches the margin as in *W. pulcherrima*. CP present and ended too at the same point where the nodal line reaches the margin. ScP branched from RA only apically as concave vein in line with nodal line. The cell below Rs+ M_1 narrow; distal portion beyond the nodal line as long as the basal portion. M branched dichotomously. Crossvein r-m short. CuA 2-branched; CuA_1 aligned with the stem of CuA; CuA_2 strongly curved towards CuP just after the branching from CuA; CuP simple, close to claval fold. Crossvein

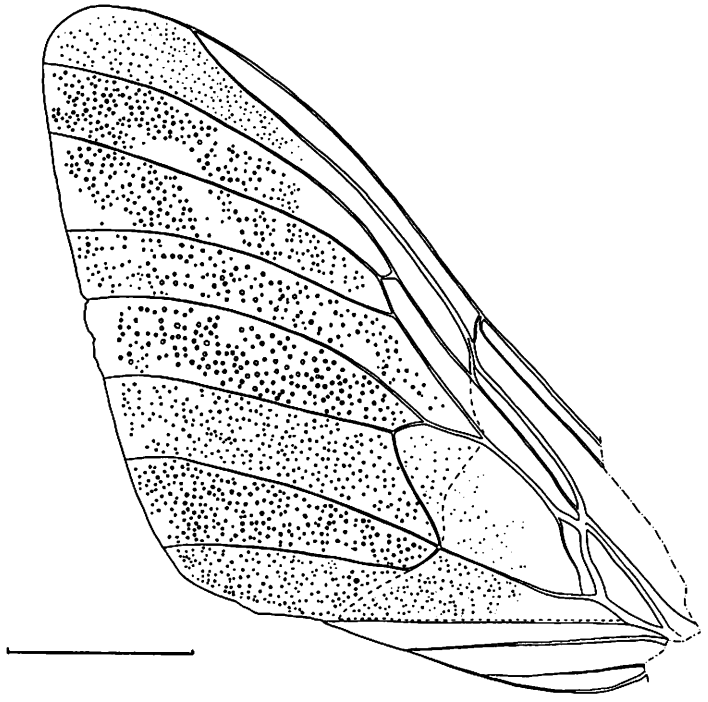

Fig. 1. *Parawonnacottella araripensis* gen. & sp. nov. Holotype, left forewing, KMNH IP 000,003. Scale 10 mm.

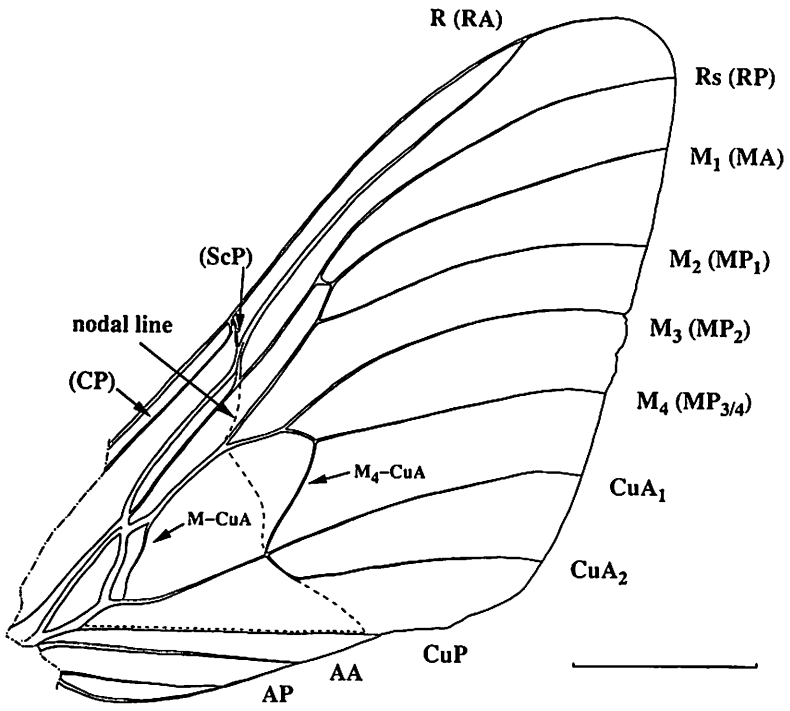

Fig. 2. *Parawonnacottella araripensis* gen. & sp. nov. Forewing redrawn and reversed for the comparison. Scale 10 mm.

m-cua well preserved and narrow. Clavus with two unbranched anal veins. Nodal line traceable and almost the same as in *W. pulcherrima*. The membrane is pitted not only distad of the nodal line but also basad of that line. The costal sclerite is missing at the wing base in the unique type.

Holotype. Left forewing. KMNH IP 000,003.
Dimensions. Length 47 mm, width 22 mm.
Type locality and horizon. Nova Olinda, Araripe Basin, N. E. Brazil. Crato Formation, Upper Aptian to Lower Albian (MAISEY, 1990).

Remarks. Palaeontinidae showed the greatest diversity during the Jurassic. "By the lower Cretaceous, the Permian families had dwindled to a single representative, the highly successful and distinctive Palaeontinidae. Only three genera of this family are known from the Jurassic/Cretaceous boundary" (HAMILTON, 1990: 120). Known genera from each period and locality are summarized in Table 1 after CARPENTER's milestone (1992) and some works (REN, 1995, etc.) and it distinctively reflects the HAMILTON's above statement.

Table 1. Genera of Palaeontinidae and their localities (After CARPENTER, 1992 etc.). Fore- and hindwing based in bold.

Age	Forewing based	locality	Hindwing based	locality
Permian	*Palaeocicadopsis*	Inner Mongolia		
Triassic	*Asiocossus*	Kirghiz		
	Fletcheriana	Australia (NSW)	***Fletcheriana***	Australia (NSW)
Jurassic	*Suljuktocossus*	Kirghiz	*Plachutella*	Kazakh, Tadzhik
	Phragmatoecicossus	Asian RSFSR	*Shurabocossus*	Tadzhik
	Ijacossus	Asian RSFSR	*Suljuktaja*	Kirghiz
	Turgaiella	Kazakh	*Yumenia*	China (Gansu, Hebei)
	Palaeontine	England	*Xucossus*	China (Hebei)
	Zygobasis	China (Gansu)	*Sinopalaeocossus*	China (Hebei)
	Pseudocossus	Asian RSFSR, Kazakh	***Pseudocossus***	Asian RSFSR, Kazakh
	Cicadomorpha	Kazakh		
	Palaeontinodes	Tadzhik, Asian RSFSR		
	Palaeontinopsis	Tadzhik		
	Palaeocossus	Asian RSFSR		
	Phragmatoecites	Asian RSFSR		
	Yanocossus	China (Hebei)		
Cretaceous	*Wonnacottella*	Spain (Montsech)		
	Pachypsyche	Spain		
	Ilerdocossus	Spain		
	Montecocossus	Spain		
	Cyllonium	England		
	Parawonnacottella	Brazil (Araripe)		

Moreover, this new genus and species shows close similarity with *W. pulcherrima* from Rubies, Spain (Fig. 3). CP lacks in the original drawing and the description, however, it might be present judging from the photograph (WHALLEY & JARZEMBOWSKI, 1985: Fig. 10). This similarity might suggest that Palaeontinidae were still widespread during the Early Cretaceous even though they became extinct at the end of that period. Further revisional study and more material will be needed to discuss such a problem in this interesting family.

Acknowledgments

I would like to express my cordial thanks to Dr. Masamichi OTA, Director of KMNH, Dr. André NEL, Muséum national d'Histoire naturelle, Paris, and Dr. E. A. JARZEMBOWSKI, Maidstone Museum & Art Gallery, Maidstone, for their valuable comments on an early draft of this paper; to Dr. David A. GRIMALDI, American Mus. Nat. Hist., New York, Dr. Mamoru OWADA, National Science Museum, Tokyo, Dr. Satoshi KAMITANI, Entomological Laboratory, Kyushu University, Fukuoka, Mr. REN Dong, Geological Museum of China, Beijin, and the staff of the General Library in the Natural History Museum, London for help with literature search.

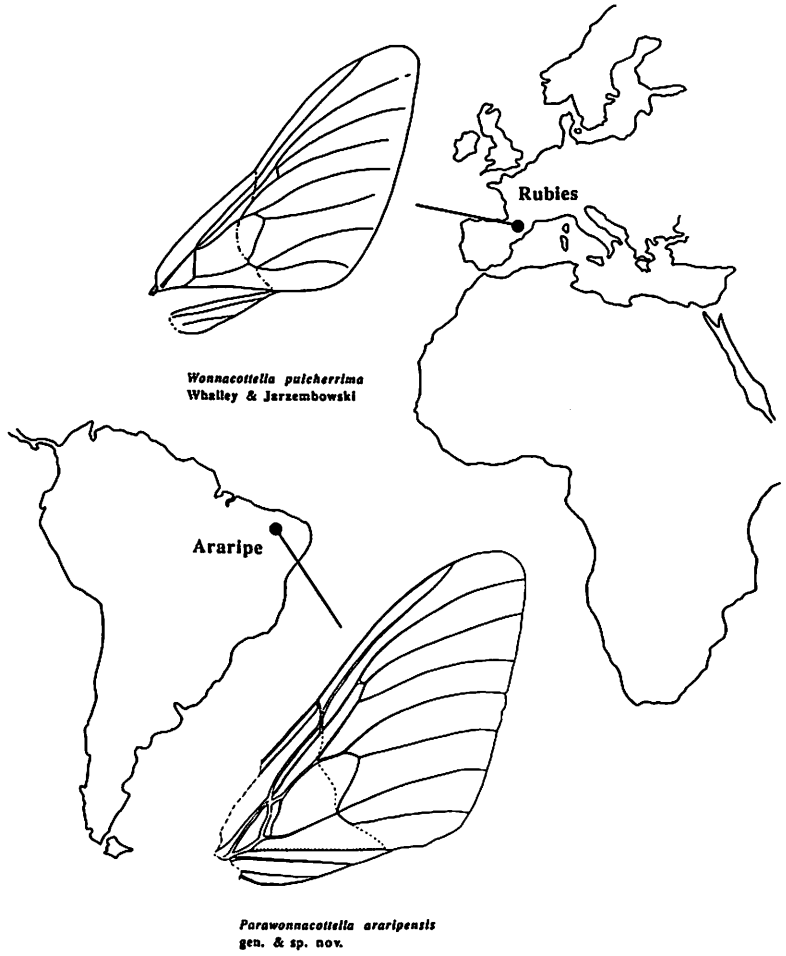

Fig. 3. Localities of *Wonnacottella pulcherrima* WHALLEY & JARZEMBOWSKI and *Parawonnacottella araripensis* gen. & sp. nov. Wing of *Wonnacottella pulcherrima* redrawn from WHALLEY & JARZEMBOWSKI (1985).

References

CARPENTER, F. M. 1992. *Treatise on Invertebrate Paleontology.* Part R. Arthropoda 4, Vol. 3 and 4 (Hexapoda), xxii+655 pp.

DWORAKOWSKA, I. 1988. Main veins of the wings of Auchenorrhyncha (Insecta, Rhynchota: Homoptera). *Ent. Abhand.*, **52**(3): 63–108.

HAMILTON, K. G. A. 1990. Homoptera: 82–122. *In* GRIMALDI, D. A. (ed.), Insects from the Santana Formation, Lower Cretaceous, of Brazil. *Bull. Amer. Mus. Nat. Hist.*, **195**: 5–191.

HONG, Y. 1981. *Mesozoic fossil insects of Jiuquan Basin in Gansu Province.* 187 pp. 39 pls. Geological Publishing House, Peking.

HONG, Y. 1983. *Middle Jurassic fossil insects in North China*. 223 pp. 28 pls. Geological Publishing House, Beijing.

KUKALOVÁ-PECK, J. 1991. Fossil history and the evolution of hexapod structures. *in* NAUMANN, I. D. *et al.* (eds.). *The insects of Australia, a textbook for students and research workers*. vol. 1 (2nd edition), pp. 141–179, Melbourne University Press, Melbourne.

MAISEY, J. G. 1990. Stratigraphy and depositional environment of the Crato Member (Santana Formation, Lower Cretaceous of N. E. Brazil): 15–19. *In* GRIMALDI, D. A. (ed.). Insects from the Santana Formation, Lower Cretaceous, of Brazil. *Bull. Amer. Mus. Nat. Hist.*, **195**: 5–191.

REN, D. 1995. Homoptera: 64–73. *In* REN, D. *et al.* *Faunae and stratigraphy of Jurassic-Cretaceous in Beijing and the adjacent areas*. 222 pp., 32 pls. Seismic Publishing House, Beijing.

WHALLEY, P. E. S. and E. A. JARZEMBOWSKI. 1985. Fossil insects from the lithographic limestone of Montsech (late Jurassic-early Cretaceous), Lérida Province, Spain. *Bull. Br. Mus. nat. Hist.*, London, (Geol.), **38**(5): 381–412.

A New Palaeontinid Species from the Lower Cretaceous of Brazil (Homoptera: Palaeontinidae)

Kyoichiro UEDA

Plate 1

Explanation of Plate 1

Fig. 1. *Parawonnacottella araripensis* gen. & sp. nov. Holotype, left forewing, KMNH IP 000,003.

Fig. 2. Ditto.
Close up of the basal portion.


1
2